



# STEAM ENRICHMENT PROGRAM



BE A RESEARCHER, DESIGNER, ENGINEER

PREPARING YOU FOR UNIVERSITY SUCCESS



Explore your passion for Science, Technology, Engineering, Arts and Math with our STEAM Enrichment Program. You will grow your talent and develop your knowledge to be your best.

The STEAM Enrichment Program allows you to benefit from classes taught by experts in the field, gaining insight into STEAM fields at a professional level.

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**STEAM** - Science, Technology, Engineering, Arts and Math

**“MY FAVORITE THING ABOUT CATS BOSTON IS THE VAST AREA OF ACADEMIC SUBJECTS AND ACCESSIBILITY YOU HAVE TO PROFESSORS”**

Uljad from Albania  
Class of 2018

Progressed to New York University (#30 National University) to study Engineering with a major scholarship. He also received two acceptances to two top 100 national universities.

# STEAM ENRICHMENT PROGRAM

## PREPARING YOU FOR SUCCESS IN STEAM

### Be your best at:



Problem solving



Critical thinking



Analytical skills



Technical skills

### Program description

The STEAM Enrichment Program is a selection of electives, combined with event participation and a project presentation, leading to an award that will improve your college application and demonstrate your achievements.

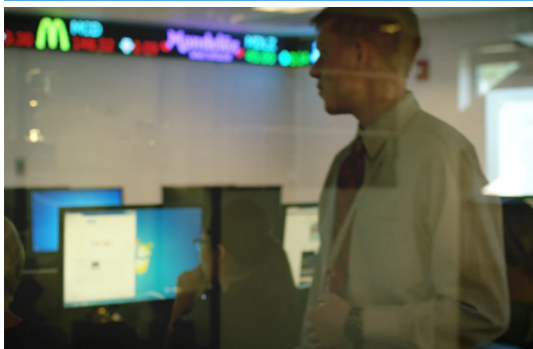
This program is designed for students who have an interest in the STEAM fields, and are looking to progress onto a top college/university in the US.

By following our three step program, you will develop and excel in your area of interest under the guidance of a team of STEAM tutors. You will also receive expert support from our college counselors to help you apply to leading colleges/universities.

The STEAM Enrichment Program gives you the opportunity to explore the skills needed as engineers, doctors, developers, scientists, analysts and programmers.

### Quick facts:

Age | 14+  
Course length | 2 years minimum  
Course dates | September and January



Be a mathematician. Students at the Invitational Mathematics Meet at the Worcester Polytechnic Institute



Be a researcher. Students presenting their ideas at the 2018 Youth Cities medical technology program 'L3 Innovation Challenge'



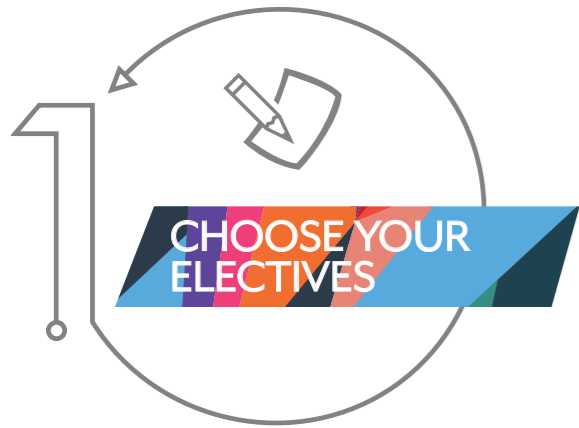
“I HAVE A DREAM OF  
BECOMING A DOCTOR AND  
RETURNING TO INDIA TO HELP  
PEOPLE GET THE HEALTH  
SERVICES THEY NEED”

Vidhi from India  
Class of 2017

Progressed to study Biology pre-med  
at Penn State University (#52 National University)

# PROGRAM DETAILS

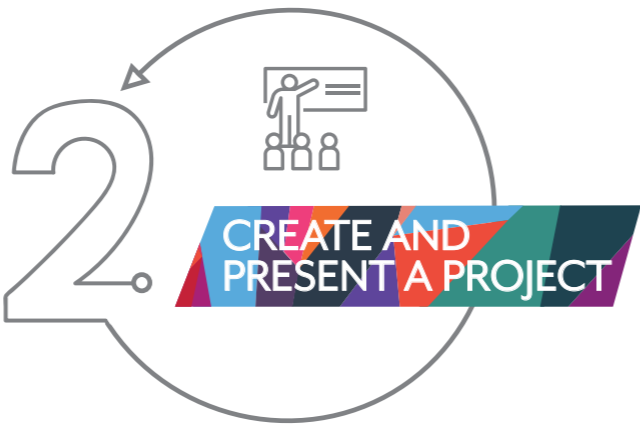
## THREE STEPS TO SUCCESS



To complete this program, you must choose 5 STEAM electives

- Environmental Science CP
- Macroeconomics CP
- Microeconomics CP
- Biomechanics
- Genetics
- Contemporary Issues
- Introduction to Law
- Social Justice Literature
- Computer-Aided Design
- Digital Imaging/Internet Self-Marketing
- Robotics
- Open Source Engineering
- Digital Photography & Video Production
- Visual Storytelling
- Business of Music
- Advanced Fashion: Technology & Marketing
- Theatre Production
- Professional Communication
- Music Technology & Production
- Acting for Film
- Costume Design and Construction
- Game Theory
- Computer Science
- Practical Application of Statistics
- Financial Management

**CP** - College Prep: These are standard level courses suitable for most students and are needed to obtain your high school diploma.



Use skills developed in your electives to complete a capstone project

Students will create and present a project approved by the Director of CATS Innovation and a project Advisor. All projects will be showcased at the school's annual fair and documented in an online portfolio. Potential student projects could include:

- An interactive art piece, blending technology and visual art
- A gesture controlled robot, with innovative design and coding
- A new board game, using 3D printed figures and custom designed gameplay
- A model smart house, controlled from your phone by the Internet-of-Things
- A high-tech costume for a theatrical production, integrating technology and fashion



Participate annually in public events

Students must attend and reflect upon at least three public events with significant STEAM content. Previous events students have participated in include:

- Science and technology festivals
- Museum exhibits
- Lectures from professionals in the STEAM fields
- Films and performances
- Local fairs and competitions



Receive your STEAM enrichment certificate

On successful completion of the program, you will be awarded a certificate to demonstrate your achievements throughout the STEAM Enrichment Program.

Your STEAM enrichment certificate will not only be an addition to your record of achievement, but it will also benefit your overall college application to top colleges in the US. With the help of our college counseling team, this program will demonstrate your commitment and passion to the STEAM fields, evidencing to high ranking colleges why you deserve your place.

# STEAM AT CATS ACADEMY

## BE INNOVATIVE

Explore ideas, experiment with materials, and build your own devices. CATS Academy will inspire you to apply your knowledge of Science, Technology, Engineering, Arts and Math, and learn how they work in the real world. Our facilities at CATS Academy allow students to explore a wide range of talents and interests within professional, well-equipped environments.



Six wet and three dry science labs



Over 43 classrooms



An innovation lab

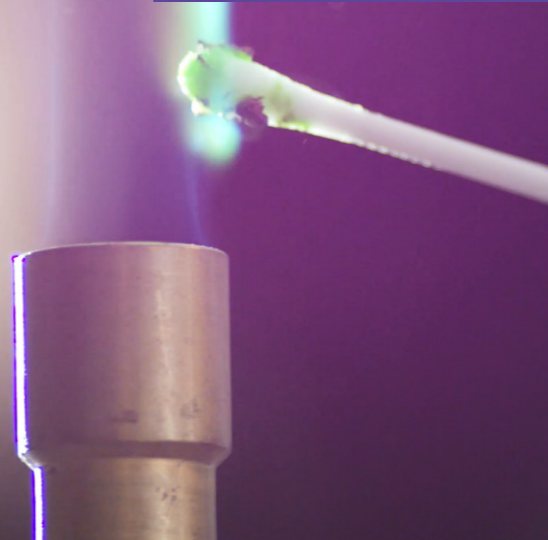


A suite of iMacs

# BE PREPARED

State-of-the-art  
science labs  
on campus

Scan the Zappar  
code to watch our  
STEAM video



**Be prepared.** Study in one of nine state-of-the-art science labs on campus



**Be a critical thinker.** Analyze and solve problems through hands-on learning



**“STUDENTS DESIGN THEIR OWN PATH OF STUDY, FIND CONNECTIONS BETWEEN DISCIPLINES, AND BUILD SKILLS THAT ARE REQUIRED IN THE 21ST CENTURY WORKPLACE”**

Jeff Napior,  
Director of the STEAM Enrichment Program  
Chair of Technology Department & Math Teacher

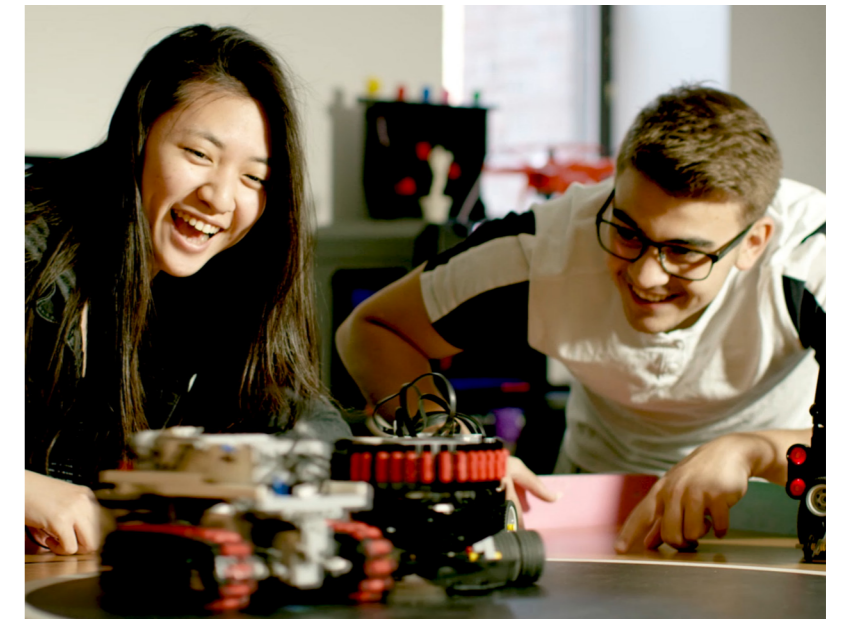
BS, Aerospace Engineering, Cal Poly, San Luis Obispo  
MS, Aeronautical Science, Embry Riddle Aeronautical University

### Extracurriculars

Put into practice what you learn in the classroom by joining an after school club. Take part in regional and national Math competitions, build and code moving robots, take part in the medical research program at LabCentral, MIT or develop your skills working on scientific research projects.

### Excursions

Recent excursions have included a trip to Boston Museum of Science, a visit to the Worcester Polytechnic Institute to participate in a national Math team competition and a trip to the Bridgewater State University observatory to use the university telescopes.



**Be a programmer.** Students code and build their own robots

# SCIENCE AND SOCIAL SCIENCE

## BE AN ENVIRONMENTALIST, DOCTOR, LAWYER

### Environmental Science CP

Learn the interrelationships of the natural world by examining environmental problems and possible solutions.

### Macroeconomics CP

Learn how economic decisions are made nationally and internationally, and examine economic systems. Focus areas include markets, industries, trade, policy, management, and entrepreneurship.

### Microeconomics CP

Focus on industries and companies both small and large. Analyze start-up companies, learn about Boston's high-tech industry, and take field trips to local businesses.

### Biomechanics

Study the physical principles that underlie a body's movement as it relates to the evolution of mobility, sports theory, and cardiovascular health.

### Genetics

Study the principles of inheritance and current theories in genetics. You will learn how molecular genetics are used in addressing industrial and medical challenges.

### Contemporary Issues

Access your own place in history by examining current social, political, and economic issues. Learn how today's events relate to historical themes. Develop your skills in analysis and communication.

### Introduction to Law

Learn legal analysis skills and strengthen your oral presentation expertise through the study of American jurisprudence and mock trial practice.

### Social Justice Literature

Explore complex issues of social justice, every person's role in creating a more equitable society, and what we owe to other humans through the lens of young adult literature.

**CP** - College Prep: These are standard level courses suitable for most students and are needed to obtain your high school diploma.



Be a creator. Students use the lab's 3D printer

# TECHNOLOGY & ENGINEERING

## BE A DESIGNER, DEVELOPER, ENGINEER

### Computer-Aided Design (CAD)

Learn 3D modeling and design your own large and small objects. Print your models on a 3D printer, and design spaces like theatre sets or your "dream house".

### Digital Imaging/Internet Self-Marketing

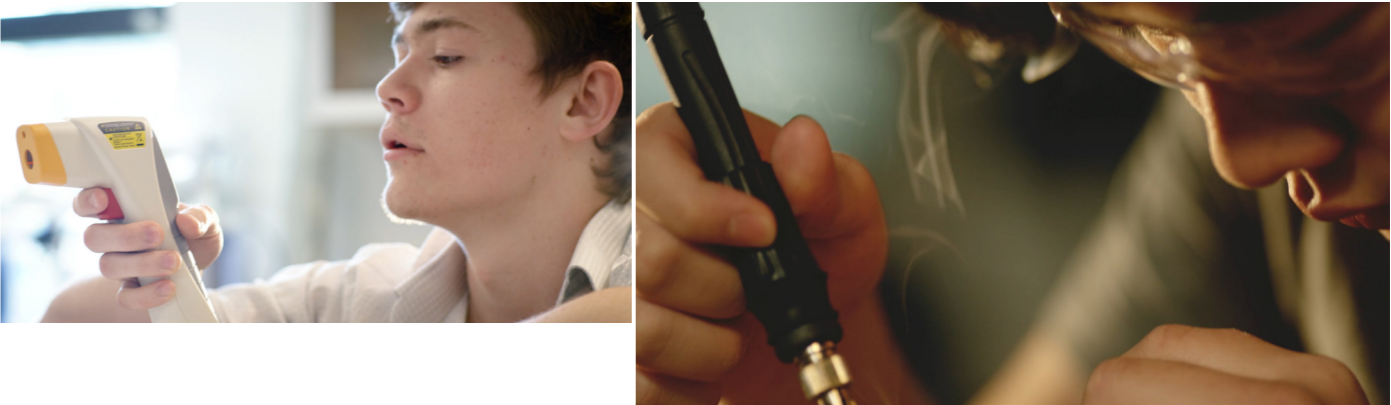
Learn the fundamentals of graphic design as well as professional self-promotion. Using Adobe Photoshop, you will create logos, t-shirt designs, and flyers promoting school events.

### Robotics

Design and build an autonomous robot that uses sensors and motors to interact with its surroundings. Learn the basics of programming and robotic mechanisms.

### Open Source Engineering

Bring your designs to life using open source Arduino technology. Learn to code, build electrical circuits, and blend technology with your passion, from robotics to interactive art and wearables.



“MY FUTURE CAREER PLANS ARE TO STUDY ENGINEERING AND WITH THAT, OPEN MY OWN INTERNATIONAL BUSINESS. I WANT TO CREATE SOMETHING WORLD CHANGING”

Amber from America  
Progressed to Spelman College to study Engineering

# ARTS

## BE A CREATOR, PHOTOGRAPHER, DESIGNER

### Digital Photography & Video Production

Learn to compose and edit your own photographs and videos to create compelling imagery and narrative.

### Visual Storytelling

Create visual narratives accompanied by a written storyline. Use traditional materials such as ink and pencil to develop images and have access to the Adobe Creative Suite for producing digital images for your narratives.

### Business of Music

Explore the backbone of the music industry during this one-semester course, learning about copyright law, band deals, and music promotion.

### Advanced Fashion: Technology & Marketing

Students in this course learn how to use fashion design software, identify market needs and opportunities, and develop and advertise products to the school community.

### Theatre Production

Develop the skills necessary for all of the technical aspects of theatre. This includes set design and construction, lighting design and operation, prop-making and design, sound, and stage management.

### Music Technology & Production

Learn to compose and produce music using the same programs as used within the music industry. From Hip-hop to jazz, you will pick apart many different genres and learn how to recreate some of the greatest hits of all time.

### Acting for Film

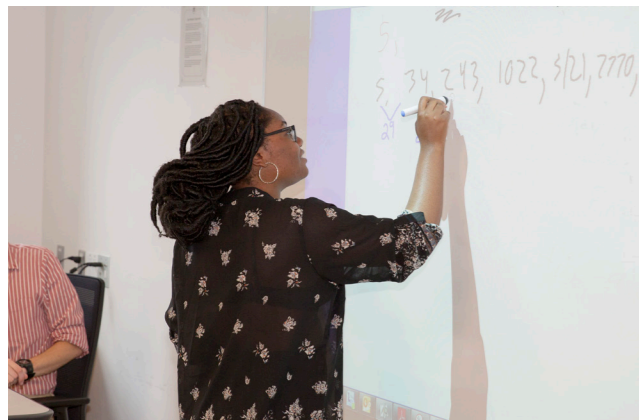
Learn about the film industry by critically assessing the performances of fellow and celebrity actors. Create your own acting video audition piece that you could send to colleges.

### Costume Design and Construction

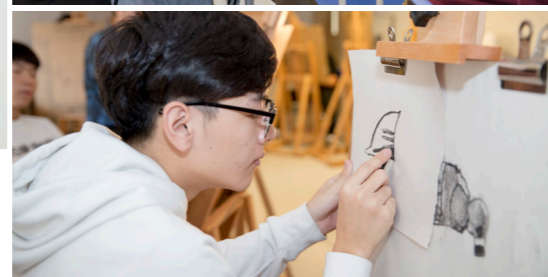
Design and create costumes for the Fall Play or Spring Musical. Collaborate with the Theatre Production class, the actors and the director to create costumes which function well for the actors, complement the set design and enhance the production. Be inspired to invent fabulous, imaginative costumes for our CATS theatre.

### Professional Communication

Learn to speak confidently and effectively in a variety of situations. Learn how to use your voice, gestures, and eye contact to deliver an engaging, clear, and well-organized speech.



Be a mentor. Work with your peers to solve mathematical equations



# MATH

## BE AN ANALYST, STATISTICIAN, PROGRAMMER

### Game Theory

Study the science of strategic decision making: those decisions for which the outcome depends on both your decision and the decisions of others.

### Computer Science

Gain a good understanding of the methods and principles of modern chemistry and develop strong analytical problem-solving skills.

### Practical Application of Statistics

Learn about probability, distributions, and hypothesis testing in this course on critical thinking. You will collect and analyze data from pop culture, politics, and sports.

### Financial Management

Prepare for adulthood by learning the major aspects of money that will affect your life. Focus on different types of investing, and the mathematical concepts that drive them.



**“MY FAVORITE PLACE  
AT CATS IS THE ART  
DEPARTMENT. I LOVE BEING  
THERE. MY PASSION FOR  
ART WAS OPENED FOR ME  
HERE AT CATS”**

Veronika from Ukraine  
Class of 2018

Progressed to Boston University  
(#42 National University)



# OUR EXPERT TEACHERS

## LEARN FROM THE BEST



MARY CARROLL

Math Department Chair

**BA, Mathematics, Carleton College**  
**MA, Liberal Studies, Reed College**

Mary Carroll is the Chair of the Mathematics Department. She works with teachers to provide a challenging math curriculum to suit the needs of all students. Prior to joining CATS Academy, Mary taught high school mathematics in Costa Rica, Turkey, Spain and the Dominican Republic, as well as the US.



JEFF NAPIOR

Technology Department Chair & Math Teacher

**BS, Aerospace Engineering, Cal Poly, San Luis Obispo**  
**MS, Aeronautical Science, Embry Riddle Aeronautical University**

Jeff has hands-on experience with the electrical integration of flight vehicles ranging from fighter jets to orbital-class rockets. He has also professionally trained US Navy aircraft technicians.



MIKE CERBARANO

Math Teacher

**BS, Mathematics, Bridgewater State University**

Michael Cerbarano is a member of the mathematics faculty at CATS Academy. Prior to joining CATS, Michael served and is still serving as an adjunct mathematics professor at Massasoit Community College. Michael brings over eight years of higher education experience in both lower and upper-level mathematics courses.



MUHAMMAD NAJIB

Math Teacher

**BS, Computer Science and Mathematics, Hamilton College**

Muhammad enjoys solving challenging quantitative problems, which inspired him to study Computer Science and Mathematics in college. Muhammad also enjoys public speaking especially impromptu speeches, a skill he learned while being part of the debate team in college.



ANNIE SCHNEIDER

Math Teacher

**BA, Mathematics and Secondary Education, Assumption College in Worcester, MA**

Annie Schneider joined the CATS Mathematics Department for the start of the 2018-2019 school year. Prior to joining CATS Academy, Annie taught high school mathematics and coached at Milton Academy and at the Williston Northampton School.



THOMAS COON

Science Department Head

**BS, Insect and Human Society and Thought, University of Massachusetts, Amherst**

Tom fell in love with teaching when working as an instructor at the Roger Williams Park Zoo. His diverse interests led him to serve as a volunteer in the United States Peace Corps posted in Gyumri, Armenia. Tom also spent a year teaching English in Novosibirsk Russia.



JUSTIN DE SANTIS

Math Teacher

Justin De Santis is a Math teacher specializing in proof writing and game theory. He is also the coach of the CATS Boston Ultimate Frisbee team. Prior to joining CATS Justin spent five years living in Maine working as a high school math teacher, math team advisor, and tennis coach at Lee Acade. "As a math enthusiast, I feel so fortunate to be a part of the incredibly passionate and dedicated faculty here at CATS."



KADIJAH FIGARSKY

Math Teacher

**BS, Mathematics, Keene State College**  
**MS, Mathematics, University of Connecticut Storrs**

Before joining CATS, Kadijah worked in the field of neuroscience research at an NYU School of Medicine affiliated institute. She started teaching math in graduate school, where she was a teaching assistant.



DOMINIQUE LOMAX

Math Teacher

**BA, Mathematics, Willamette University**  
**MAT, Mathematics, Willamette University**

Prior to joining CATS, Dominique taught at a school in China for three years. Once returning to the U.S. she worked at various schools that had an international student body or an international focus.



LEILA BRADLEY

Biology Teacher

**PhD, Developmental Neurobiology, National Institute for Medical Research**

Prior to joining CATS Academy, Leila performed her postdoctoral training at the Whitehead Institute, MIT. Her academic research also culminated in a faculty position at University College London Medical School in 2001.



JASON FELDSTEIN

Science Teacher

**BA, Physics, Brooklyn College**  
**BA, Film and Television, Tisch School of the Arts**  
**MA, Cinema Studies, New York University**

Jason has taught Honors and CP Physics as well as Honors and AP Statistics. He currently teaches Honors Physics and AP Physics: Mechanics as well as running the film club.



JONATHAN YIP

Science Teacher

**PhD, Physical Science Division, University of Chicago**

Prior to joining CATS Academy, Jonathan worked as a high school science teacher, private tutor, municipal administrator and academic researcher. He has eight years of experience in teaching high school science and over ten years of academic research.

# STUDENT SUCCESS

## ACCEPTANCES AND PROGRESSIONS

### OUR COLLEGE COUNSELING TEAM



**DAVID HOOKS**  
Senior Counselor

**BA, Guilford College  
MA, UNC-Greensboro  
EdD, University of Pennsylvania**

David has worked in education since 1979. He began college counseling at West Nottingham Academy, serving a diverse population of domestic and international students; here he built a four-year counseling program which was highly successful. He loves that CATS brings multiple nationalities together and places students in top schools.



**DANIEL CASSELY**  
Counselor

**BA, University of Southern Maine  
MA, Boston College**

Daniel comes to CATS Academy from the Sacred Heart School where he served as the Director of Advancement. He was also responsible for the marketing and communications development and alumni relations departments. Prior to this Daniel gained over ten years' experience in the admissions offices of Boston University and the University of New England.



**REBECCA ROIHL**  
Counselor

**BA, Psychology, Wesleyan University  
MEd, School Guidance Counseling, Cambridge College**

Prior to joining CATS Academy, Becky was the Manager of Tutor and Teacher Services at Summit Educational Group. She hired and trained new tutors and teachers and kept them updated about the latest trends in standardized testing. She also educated parents about college admissions requirements and helped students achieve higher SAT and ACT scores.

### Number of acceptances to top 50 universities

TOP 50 NATIONAL UNIVERSITIES	NUMBER OF ACCEPTANCES	2018 RANK
Rice University	1	16
Washington University, St. Louis	2	18
Tufts University	3	29
New York University	7	30
University of North Carolina, Chapel Hill	1	32
University of California, Irvine	8	32
University of Rochester	4	33
Brandeis University	1	34
Georgia Institute of Technology	2	35
Boston College	2	36
College of William and Mary	1	36
University of California, Davis	8	37
University of California, San Diego	5	37
Boston University	24	37
Case Western Reserve University	1	38
<b>Total</b>	<b>70</b>	

### Specializations have included:



**“RIGHT FROM THE SECOND SEMESTER OF MY JUNIOR YEAR, MY COUNSELOR HAS BEEN INVOLVED IN THE COLLEGE APPLICATION PROCESS. WITHOUT COLLEGE COUNSELING I WOULD BE COMPLETELY LOST.”**

Binh from Vietnam  
Progressed to University of Rochester (#33 National University)  
He also received acceptances from Oberlin College, Tulane University, Syracuse University, Clark University and University of Massachusetts, Amherst.

# CLUBS AND ORGANIZATIONS

We offer you a range of extra opportunities to help you develop academically, and creatively, whilst enhancing your university or college application.

## Extracurricular activities allow you to take part in:



Local/national competitions



Group projects



School performances



Science and technology experiments

## Extracurricular activities related to the STEAM Enrichment Program:

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"><li>• Student Government</li><li>• Newspaper Club</li><li>• Tech Club/Innovation Lab</li><li>• Robotics</li><li>• Yearbook</li><li>• L3 Innovation Challenge (Youth CITIES)</li></ul> | <ul style="list-style-type: none"><li>• March-to-May Bootcamp (Youth CITIES)</li><li>• LaunchX</li><li>• Debate Club</li><li>• Model UN</li><li>• Math Club</li><li>• Rock Band</li></ul> | <ul style="list-style-type: none"><li>• Theatre</li><li>• Art</li><li>• Fashion</li><li>• Social Media Club</li><li>• Photography</li></ul> |
|---|---|---|

## L3 Innovation Challenge with Youth CITIES

L3 Innovation Challenge allows students to work with professionals in the field of medical technology development. Students design projects for seven weeks and present them before a panel of distinguished judges.

The challenge brings together over 20 students from top US high schools to work with industry experts. The program is housed at LabCentral near MIT, (a shared laboratory space for biotech start-up companies) and participants meet once a week.

The L3 Innovation Challenge is an excellent opportunity for CATS Academy students to gain practical experience in a real laboratory setting, and also to connect with medical professionals. Brainstorming, troubleshooting and public speaking are just some of the skills students will develop.

## March-to-May Bootcamp with Youth CITIES

March-to-May Bootcamp is a ten-week program where students work in teams to start a business venture. Students from a variety of backgrounds and interests develop their skills and interests to create a solution to a market opportunity. Classes are taught by local entrepreneurs and grants are awarded to top students, with continued support provided to all students that complete the Bootcamp.

The new product is presented competitively before a panel of judges. Weekly sessions for Youth CITIES programs are held near MIT, with presenters and mentors often part of the MIT academic community. All students who complete the Bootcamp are recognized as Youth CITIES Scholars by the City of Boston or Cambridge for their entrepreneurial training.

**Youth CITIES:** A platform that cultivates youth entrepreneurship through its award-winning programs.

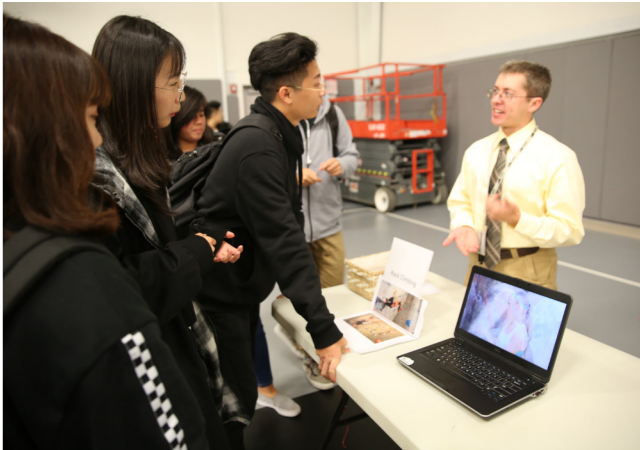
Be a market leader. Students take part in the L3 Innovation challenge at Lab Central



Be a performer. Join the school musical and explore your theatrical talents



Be an entrepreneur. Students take part in the March-to-May Bootcamp



Be ambitious. Students explore the many clubs on offer at the activities fair

“BECAUSE OF THE MODEL UNITED NATIONS CLUB I GOT INTO UNIVERSITY, THEY TOLD ME MY OUTSTANDING MUN EXPERIENCE REALLY INTERESTED THEM, SO I REALLY APPRECIATE THAT I HAD THE CHANCE TO BE IN IT.”

Sabrina from China  
Progressed to American University (#78 National)  
to study International Relations





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CATS Academy Boston



@catsacademyboston



[www.youtube.com/user/cambridgeeducationgr](http://www.youtube.com/user/cambridgeeducationgr)



Scan this code to view  
the CATS Academy showreel

#### The CATS experience online

In this brochure, you will see a "Zappar code" - like this one. Download the [Zappar](#) app and scan the code with your smart device to learn more about the CATS experience through videos. Happy zapping!